

Final

HABITAT RESTORATION PROGRAM

FY 02-03 WORK PLAN

**RECOVERY PROGRAM
FOR THE
ENDANGERED FISHES
OF THE
UPPER COLORADO RIVER BASIN**

October 12, 2001

HABITAT RESTORATION PROGRAM

FY 02-03 WORK PLAN

TABLE OF CONTENTS

1.	Redlands Passage O&M.....	redlands O&M C-4b
2.	Price-Stubb Passage Restoration.....	pstubb C-5
3.	Grand Valley Project Passage and Screen Construction.....	gvp C-23
4.	Tusher Wash Canal Screen.....	tusher C-28
5.	GVIC Canal Screen.....	gvic screen C-29
6.	Floodplain Habitat Restoration Program	
a.	Umbrella SOW.....	umb C-6
b.	Hydrology/Geomorphology.....	hyd C-6
c.	Larval Bonytail Survival in Depressions.....	bt C-6
d.	Land Acquisition.....	land C-6
e.	Easement Management.....	easement C-6
f.	Larval Entrainment into Depressions.....	larval entrainment C-6
g.	Larval Razorback Survival in Depressions.....	rz C-6

FINAL

FLOODPLAIN HABITAT RESTORATION PROGRAM

FY 02-03 WORK PLAN

**RECOVERY PROGRAM
FOR THE
ENDANGERED FISHES
OF THE
UPPER COLORADO RIVER BASIN**

October 12, 2001

FLOODPLAIN HABITAT RESTORATION PROGRAM

FY 02-03 WORK PLAN

TABLE OF CONTENTS

1.	Umbrella.....	umb C-6
2.	Hydrology/Geomorphology.....	hyd C-6
3.	Larval Bonytail Survival in Depressions.....	bt C-6
4.	Land Acquisition.....	land C-6
5.	Easement Management.....	easement C-6
6.	Larval Entrainment into Depressions.....	larval entrainment C-6
7.	Larval Razorback Survival in Depressions.....	rz C-6

**COLORADO RIVER RECOVERY PROGRAM
FY-2002-2003 SCOPE OF WORK**

Project No.: **C-6**

Lead Agency: U.S. Bureau of Reclamation
Submitted by: Pat Nelson
Address: U.S. Fish and Wildlife Service
P.O. Box 25486, DFC
Denver, CO 80225
Phone: 303-969-7322 Ext 226
FAX: 303-969-7327
E-Mail: Pat_Nelson@FWS.GOV
Date: October 12, 2001 (Revised December 12, 2001)

Category:

- ☐ Ongoing project
- ☒ Ongoing-revised project
- ☐ Requested new project
- ☐ Unsolicited proposal

Expected Funding Source:

- ☒ Annual funds
- ☒ Capital funds
- ☒ Other
- ☒ O&M

I. Title of Proposal:

Floodplain Habitat Restoration Program - Umbrella Work Plan

II. Relationship to RIPRAP:

-GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

ACTIVITY II. RESTORE HABITAT

- II.A.1. Conduct inventory of flooded bottomland habitat for potential restoration.
- II.A.2. Screen high-priority sites for potential restoration/acquisition.
- II.A.3. Conduct NEPA for floodplain restoration program.
- II.B. Support actions to reduce or eliminate contaminant impacts.

-GREEN RIVER ACTION PLAN: MAINSTEM

ACTIVITY II. RESTORE HABITAT

- II.A. Restore and manage flooded bottomland habitat.
- II.A.1. Conduct site restoration.
- II.A.2. Acquire interest in high-priority flooded bottomland habitats.
- II.A.3. Implement levee removal strategy at high-priority sites.

-COLORADO RIVER ACTION PLAN: MAINSTEM

ACTIVITY II. RESTORE HABITAT

- II.A. Restore and manage flooded bottomland habitat.
- II.A.4. Implement levee removal strategy at high-priority sites.
- II.A.5. Acquire interest in high-priority flooded bottomland habitats.

-COLORADO RIVER ACTION PLAN: GUNNISON RIVER

ACTIVITY II. RESTORE HABITAT

- II.A. Restore and manage flooded bottomland habitat.

- II.A.2. Implement levee removal strategy at high-priority sites.
- II.A.3. Acquire interest in high-priority flooded bottomland habitats.

III. Study Goals, Objectives, End Product:

Naturally functioning, highly productive low-velocity habitats are thought to be an essential component of the life history of some or all of the native fishes of the upper Colorado River basin, but many such habitats have been hydrologically cut off from the main channel of the river and no longer provide benefits to the native fishes. The goal of the Floodplain Habitat Restoration Program is to restore or enhance natural floodplain functions that support recovery of endangered fishes in the Upper Basin. Natural floodplain functions include provision of food, enhanced water temperatures, high quality water, shelter from high velocities, vegetative cover for predator avoidance, nursery rearing habitats, and spawning habitats.

Success of the Habitat Restoration Program, and ultimately the Recovery Program, is contingent upon integration of and close coordination between the Habitat Restoration Program and other Recovery Program elements. The framework presumes continued progress in other Recovery Program elements as identified in the RIPRAP, especially development and implementation of instream flow recommendations, stabilization of endangered fish populations, reduction in impacts of nonnative fishes and sportfishing, and continuation of population monitoring.

<u>Goal</u>	To restore or enhance natural floodplain functions that support recovery of endangered fishes in the upper Colorado River basin.
-------------	--

Note: Objective #'s 1 and 2 address what may be the most critical and limiting life history phase for both the razorback sucker and the bonytail. If the right kinds of habitat can be provided to achieve larval survival in the presence of abundant nonnative fishes, then self-sustaining populations will likely be possible. Objective # 3 addresses adult/juvenile habitat, and the three objectives combined address riparian ecosystem habitat.

Objective 1. Determine how much nursery habitat will be needed to recover the razorback sucker and bonytail once levels of survival/recruitment of larvae are demonstrated in floodplain depression wetlands.

Objective 2. Restore/enhance nursery habitats to entrain and sustain larvae.

Objective 3. Protect the best of remaining adult and juvenile floodplain habitats for seasonal use by endangered fishes.

End Products: Functional floodplain habitats of sufficient quantity, quality, and spatial distribution to support the survival, growth, recruitment, and reproduction (i.e., recovery) of the endangered fishes.

IV. Description of past performance on this or similar projects:

In 1991, Ed Wick developed a draft issue paper entitled "River Management and Habitat Restoration Strategy", which recommended restoration of floodplain habitats for use by endangered fishes. One specific recommendation was to reconnect Old Charlie Wash (Wood's Bottom) to the Green River for use by endangered fishes. Old Charlie Wash became a pilot site for testing hypotheses regarding floodplain habitat restoration. To prepare the site, water inlet and outlet control structures, fish screens, and a fish harvest kettle were installed. The site was tested during 1994, 1995, and 1996, to see if water levels and fish predators can be controlled, and if razorback larvae will survive and grow. During 1995 and 1996, spring flows overtopped the levees, allowing access by fishes of all sizes and species. Although nonnative fishes greatly out-numbered native fishes in Old Charlie, 28 young razorbacks managed to survive in 1995; 45 in 1996. This many razorback larvae surviving to become juveniles in the presence of large numbers of nonnative fishes is considered significant. In addition, Old Charlie was used by 10 adult razorbacks and 14 juvenile pikeminnow during 1995-96.

The Gravel Pit at 29 5/8 Road (Gardner Pond) was connected to the Colorado River (RM 174) in December 1995. Although all fishes had been removed, nonnatives quickly recolonized the site after connection, as expected. Native fish use of the site varied seasonally, with highest use during spring runoff (39% native fishes, including 7 adult pikeminnow). During 1998 twenty adult pikeminnow were captured in Gardner and Pickup ponds. During 1999 seventeen sub-adult and adult Colorado pikeminnow were captured in Gardner Pond. One pikeminnow was captured three different times in Gardner Pond; four different pikeminnow captured in 1998 in Gardner Pond were also recaptured in Gardner Pond in 1999.

In March 1997, levees were breached at Bonanza Bridge, The Stirrup, and Old Charlie Diked. All sites were used by native and endangered fishes. The Bonanza Bridge site was used the most by adult pikeminnow and razorbacks (and, of course, numerous nonnative fishes). One larval razorback was found in the Bonanza Bridge site and one in Old Charlie Diked.

During 1997 and 1998, levees were breached at Horseshoe Bend, Baeser Bend, Above Brennan, Johnson and Leota. There were not enough razorback suckers left in the Green River to detect a measurable population response to levee breaching. Propagation and stocking activities have been accelerated, and razorbacks have been and are being stocked into floodplain depressions as well as the main channel. It appears that floodplain habitat restoration may not have a significant or long-term effect on the abundance of nonnative fishes in the main channel of the Green River.

In April 1999, Age I razorbacks 3-5 inches in length were stocked into The Stirrup, Baeser Bend, and Above Brennan. When they were retrieved in September, they were ~14 inches in length. During spring of 2000, post-winter sampling indicated survival over winter (percent survival unknown at this time).

During spring of 1999 and 2000, some hatchery produced razorbacks that had been stocked into the river were found on the spawning bar, suggesting that (some) hatchery razorbacks know when and where to spawn. One of eleven 1991 year-class hatchery-produced razorbacks that had been stocked into Baeser Bend in April 1999 had left the floodplain wetland and was found on the spawning bar May 11, 2000.

V. Study area

Green River RM 0-318; Colorado River RM 0-240; Gunnison River RM 0-75.

VI. Study Methods/Approach and Description of Work

There are three major types of floodplain habitat to support recovery of endangered fishes.

1. Nursery habitat. Nursery habitats are defined as floodplain depression habitats that entrain drifting larvae, and that retain sufficient amounts of quality water to sustain larvae and juveniles throughout the year. This may be the only habitat type where razorback and bonytail larvae can survive in the presence of abundant nonnative fishes. Drifting larvae may be entrained into the site via upstream levee breaches or, in the case of the bonytail, larvae may be produced within the site. Each site must retain sufficient water because survivors will not have access back to the river until the following year's spring runoff, one year after entrainment.

2. Adult/juvenile habitat. Adult and juvenile Colorado pikeminnow, and adult razorbacks, will use inundated floodplain habitats when they are available during runoff. Nursery habitats may also be considered adult and juvenile habitats because they are used during spring runoff when they are connected to the main river channel. However, most adult/juvenile habitats are of little direct benefit to larvae, because they do not retain water throughout the year. Larvae that become entrained into adult habitats have one or two months at best before they have to go back into the river, or they will become stranded on the floodplain. Larvae grow to about one inch in one month, and a 1-inch juvenile has little chance of surviving in the river.

3. Riparian ecosystem habitat. One purpose of the Endangered Species Act is to recover and protect endangered species and "the ecosystems upon which they depend." The floodplain is an important component of riparian/riverine ecosystems via materials cycling and energy transfer. The floodplain helps "feed" the ecosystem, including the native and endangered fishes that do not use it directly. The relative importance of the floodplain is thought to be greater in systems where upstream impoundments prevent materials and nutrients from being transported through the system. Riparian ecosystem habitat,

addressed by objectives 2 and 3, may be considered as the sum total of inundated adult, juvenile, and nursery habitat, which varies as a function of flow and levees.

Objective 1: Determine how much nursery habitat will be needed to recover the razorback sucker and the bonytail.

Preliminary survival/recruitment models will be developed to estimate the amount of habitat needed to sustain razorback and bonytail populations. Habitat estimates should become more accurate, however, once larval entrainment and survival can be quantified during the following Objective 1 studies.

FY 02-03 activities under Objective 1:

During spring 2000, levees were breached on the upstream end of two floodplain depression wetlands (Bonanza Bridge and Above Brennan). Spring flows were not high enough in 2000 or 2001 to adequately test physical or biological responses of the new configurations. If 2002 is a moderate-to-high flow year, then the upstream levee breaches will be evaluated. During runoff, the **C-6 larval entrainment study** will determine how effective the sites are at entraining drifting larvae.

Related studies include **C-6 rz and C-6 bt**, where razorback and bonytail larvae will be stocked into Green River floodplain wetland depressions to determine levels of survival in the presence of nonnative fishes. If the right combination of conditions to achieve survival can be determined, then it may be possible to create those conditions at other locales. The overall goal is to entrain sufficient numbers of larvae such that the survivors can recruit into and sustain riverine spawning populations.

Objective 2: Restore/enhance nursery habitats to entrain and sustain larvae.

The following Green River floodplain wetland depression habitats have upstream levee breaches and, therefore, are considered better able to entrain drifting larvae. The ability of these sites to retain sufficient amounts of water to sustain larvae and juveniles throughout the year depends on the magnitude, timing, and duration of spring flows, storm events, and seasonal weather patterns.

Nursery habitats (that entrain drifting larvae)

Acres Inundated

<u>Site</u>	<u>Owner</u>	<u>13kcfs</u>	<u>15kcfs</u>	<u>18kcfs</u>	<u>20.3kcfs</u>	<u>24kcfs</u>
Bonanza Bridge	BLM	23	25	27	30	38
Above Brennan	BLM	41	46	49	54	63
Leota Bottom	FWS	59	65	72	74	78
Old Charlie Wash	FWS	336	?	~400	?	?
Total		459	>472	~548	>558	>579

The following Green River floodplain wetland depression habitats have downstream or lateral levee breaches and, therefore, their ability to entrain drifting larvae is questionable. As with all nursery habitats, the ability of these sites to retain water year-round is dependant upon seasonal flow and weather patterns.

Nursery habitats (that may or may not entrain drifting larvae) **Acres Inundated**

Site	Owner	13kcfs	15kcfs	18kcfs	20.3kcfs	24kcfs
Horseshoe Bend	BLM	17	19	22	25	47
The Stirrup	BLM	20	26	28	30	34
Baerer Bend	BLM	38	41	47	50	60
Johnson Bottom	FWS	20	22	24	25	28
Total		95	108	121	130	169

FY 02 activities under Objective 2:

Green River

Bonanza Bridge and Above Brennan. Post-runoff the sites will be surveyed to determine physical response to upstream levee breaching (i.e., changes in site morphology that may have resulted from erosion or deposition). Biological response will be evaluated under Objective 1, during the larval entrainment study.

Thunder Ranch. Formerly known as Escalante Ranch, Thunder Ranch has the first major floodplain wetland that would be encountered by drifting razorback larvae, six miles downstream from the spawning bar. The Recovery Program is currently working towards acquiring an easement. If successful, wetland levees will be breached to entrain drifting larvae.

Stewart Lake. Stewart Lake Waterfowl Management Area, owned by the Utah Division of Wildlife Resources (UDWR), is a major wetland located 11 miles downstream from the razorback spawning bar. The site is currently being managed by UDWR, FWS/ES-SLC, and BR-Provo for selenium remediation and waterfowl. The Recovery Program would like to include endangered fishes as part of the management scheme. Efforts are currently underway to develop a management plan that will allow selenium remediation while benefitting razorback suckers and waterfowl.

Colorado River

GJ Pipe. This gravel pit was recently acquired from Grand Junction Pipe and Supply. Located at Colorado River RM 165.5, it is approximately 5 miles downstream from the confluence with the Gunnison River. The plan for this site is to lower portions of the levees to allow entrainment of drifting larvae during spring runoff.

Gunnison River

Unawee Charolais. This recently-acquired gravel pit is located on the Gunnison River near Whitewater, RM 12, nine miles upstream from the Redlands diversion dam. The plan for this site is to lower portions of the levees to allow entrainment of drifting larvae during spring runoff.

FY 03 Activities under Objective 2

Colorado Department of Transportation. CDOT has agreed to allow the Recovery Program to study one of their floodplain depression properties, and will consider a Program proposal to restore the site for endangered fishes.

Grand Valley Audubon Society. The Audubon Society is currently considering a proposal submitted by the Recovery Program to restore their property for endangered fish. If an agreement can be reached, site construction will begin in fall 2002.

Other. Additional restoration/enhancement opportunities will likely become available as we partner with land management agencies.

Objective 3: Protect the best of remaining adult and juvenile floodplain habitats for seasonal use by endangered fishes.

The following are adult habitats over which the Recovery Program has some degree of control. The Program has acquired perpetual easements on the first three sites. The next five sites are owned by Vernal-BLM, with whom the Program has a good working relationship. The last six sites are located on the Ouray National Wildlife Refuge; Old Charlie (Diked and Wash) is owned by the Ute Tribe and is being leased to the Refuge. If it is determined that additional enhancements are needed to assist in recovery, then these sites are currently the best candidates.

Adult habitats

Acres Inundated

<u>Site</u>	<u>Owner</u>	<u>Acres Inundated</u>				
		<u>13kcfs</u>	<u>15kcfs</u>	<u>18kcfs</u>	<u>20.3kcfs</u>	<u>24kcfs</u>
Richens/Slaugh/Slaugh	RIP	0	0	[44.5]	58.7	88.8
IMC	RIP	0	0	0-3.4	10.5	13.4
Lamb	RIP	0	0	0	0	249
Bonanza Bridge	BLM	23	25	27	30	38
Horseshoe Bend	BLM	17	19	22	25	47
The Stirrup	BLM	20	26	28	30	34
Baerer Bend	BLM	38	41	47	50	60
Above Brennan	BLM	41	46	49	54	63

Johnson Bottom	FWS	20	22	24	25	28
Leota Bottom	FWS	59	65	72	74	78
Wyasket Bottom	FWS	1860	1880	1900	1920	1950
Sheppard Bottom	FWS	0	0	0	0	1630
Old Charlie Diked	FWS/Tribe	56	58	81	85	130
Old Charlie Wash	FWS/Tribe	336	>336	~400	>400	>400
Total		2470	2518	2653	2762	4809

Following are areas of inundation as a function of Jensen flows. Acreages include both nursery, juvenile/adult, and riparian ecosystem habitats. Much of this acreage is not currently protected from potential future floodplain development (i.e., the Recovery Program has no control over it). Some of the acreages may be misleading because they do not take into account what would be flooded if levees were removed, and they do not differentiate between standing water caused by "subbing" (i.e., no connection to the river) versus inundation caused by overbank flooding. For example, much of the FWS acreage is isolated from the river by flood prevention levees, and not accessible for use by endangered fishes.

Acres Inundated (Bell et al. 1998)

Landowner	20kcfs	22kcfs	25kcfs
BLM	544	874	1,002
BR	19	29	37
FWS	2,455	3,509	4,709
NPS	79	130	149
Uintah County	99	106	106
Utah	380	621	767
Ute Tribe	1,224	2,125	3,855
Private	1,104	2,156	3,302
Total	5,904	9,550	13,927

Note: Average peak flow is 19,706 cfs (USGS gage, Green River near Jensen, 56 years of record through 2000).

FY 02 Activities under Objective 3

Walter Walker SWA. More adult Colorado pikeminnow and razorback suckers have been found using Walter Walker SWA than have been captured throughout the entire remainder of the Colorado River. It is believed that these fish have been attracted to the habitat complexity and diversity of the area. The plan for this site is to lower the upstream levee in three locations to help maintain the diversity/complexity of the area.

FY 02-03 Activities under Objective 3

Partnerships. The Recovery Program will seek agreements with federal, state, and local land management agencies to enhance and protect habitat.

Tribal Lands. The Recovery Program will pursue agreements and/or acquisition of easements on Tribal lands.

Private Lands. The Recovery Program will continue to pursue acquisition of perpetual easements from private landowners.

VII. Task Description and Schedule

Objective 1: Determine how much nursery habitat will be needed to recover the razorback sucker and bonytail.

- 1.a. Develop survival/recruitment models for razorback suckers and bonytail.(12/01-2/02)
- 1.b. Develop strategic plan for habitat restoration based on results of 1.a. (3/02-5/02)
2. Analyze razorback stocking into wetlands data; draft report (11/01-3/02)
3. Conduct razorback larval entrainment study (see sow)
4. Conduct razorback larval survival study (see sow)
5. Conduct bonytail larval survival study (see sow)

Objective 2: Restore/enhance nursery habitats to entrain and sustain larvae.

FY 02

1. Physical response evaluation of Bonanza Bridge and Above Brennan 5/02-8/02
2. GJ Pipe - Construction 1/02-3/02. Physical evaluation 5/02-8/02
3. Unaweep - Construction 1/02-3/02. Physical evaluation 5/02-8/02

FY 02-03

1. Thunder Ranch - If acquisition successful, construction fall 02. Physical evaluation 5/03-8/03
2. Stewart Lake - Management Plan by 09/02. Construction 03.

FY 03

1. CDOT - Fall 02 construction if proposal approved by CDOT. Physical evaluation 5/03-8/03
2. Audubon - Fall 02 construction if proposal approved by Audubon. Physical evaluation 5/03-8/03
3. Other - Unknown at this time

Objective 3: Protect the best of remaining adult and juvenile floodplain habitats for seasonal use by endangered fishes.

1. Develop draft report for Walter Walker selenium remediation study 10/01-12/01.
2. Breach levees at Walter Walker - 1/02-3/02. Physical evaluation 5/02-8/02
3. Develop generic MOU 11/01-6/02. Approach BLM, NPS, BR, States, Counties, etc.
4. Approach Tribe - Ongoing
5. Acquire easements - Ongoing

VIII. Deliverables

Objective 1: Determine how much nursery habitat will be needed to recover the razorback sucker and bonytail.

- 1.a. Survival/recruitment models for razorback suckers and bonytail by 2/02.
- 1.b. Strategic plan by 5/02
2. Razorbacks stocked into wetlands. Draft report to coordinator 3/1/02.
3. Razorback larval entrainment study. Draft report to coordinator 7/15/03.
4. Razorback larval survival study. Draft report to coordinator 7/1/04.
5. Bonytail larval survival study. Draft report to coordinator 4/1/04.

Objective 2: Restore/enhance nursery habitats to entrain and sustain larvae.

1. Site reconfiguration evaluation report (Bonanza Bridge Above Brennan). Draft report to coordinator 12/1/02.
2. GJ Pipe - post-construction evaluation report. Draft to coordinator 12/1/02.
3. Unaweep - post-construction evaluation report. Draft to coordinator 12/1/02.
4. Thunder Ranch - post-construction evaluation report. Draft to coordinator 12/1/03.
5. Stewart Lake - Management Plan by 09/02. Construction 03.
6. CDOT - post-construction evaluation report. Draft to coordinator 12/1/03.
7. Audubon - post-construction evaluation report. Draft to coordinator 12/1/03.
8. Other - post-construction evaluation report. Draft to coordinator 12/1/03.

Objective 3: Protect the best of remaining adult and juvenile floodplain habitats for seasonal use by endangered fishes.

1. Walter Walker selenium remediation study. Draft report to coordinator 12/1/01.
2. Walter Walker post-construction evaluation report. Draft to coordinator 12/1/02.
3. Generic MOU 6/1/02.
4. Easement contracts - Ongoing

IX. FY 02 Budget

Capital Funds

		<u>Overhead*</u>
Contaminants (site screening)	\$ 20.0K	
<u>Data Collection (per site)</u>		
-Labor (GS-12 for 3 days)	\$1050	
-Travel	\$ 75	
-Supplies	\$ 40	
-Shipping	\$ 50	
	\$1215	
<u>Sample Analyses (per site)</u>	<u>RTP*</u>	
-Water 1x	(\$33+\$183)	
-Sediment 1x	(\$71+\$183)	
-Invertebrate (2 each) 2x	(\$64+\$183)	
-Fish Tissue (2 each) 2x	(\$64+\$183)	
	\$1458	
=====		
<u>Total per site</u>	<u>\$2673</u>	
*Rapid Turnaround Premium		
Note: Cost per site depends on size of site,		
distance from office, and number of samples.		
Hydrology/Geomorphology (see SOW)	\$ 95.7K	
Pre-acquisition assessments		
Design options for restoration		
Construction oversight		
Post-restoration monitoring/evaluation		
Land Acquisition Activities (see SOW)	\$ 748.0K	\$ 26.5K
Levee Removal Construction (see attached budget)	\$ 423.8K	
Unawep Charolais	\$186.8K	
GJ Pipe	\$176.8K	
Walter Walker	\$ 60.2K	
=====		
Total =	\$1,287.5K	\$ 26.5K

Annual Funds

-Larval Entrainment into Depressions	\$ 15.0K
--------------------------------------	----------

-Larval Razorback Survival in Depressions	\$ 58.0K	
Total =	\$ 73.0K	

O&M Funds

-Larval Bonytail Survival in Depressions	\$ 60.9K	
-Easement and Weed Management	\$ 50.0K	
Total =	\$ 110.9K	

Grand Total =	\$1,471.4K	\$ 26.5K
---------------	------------	----------

*Assumes 10% BR-FWS overhead

FY 03 Budget

Capital Funds

		<u>Overhead*</u>
Contaminants (site screening)	\$ 20.0K	
Hydrology/Geomorphology	\$ 100.0K	
Pre-acquisition assessments		
Design options for restoration		
Construction oversight		
Post-restoration monitoring/evaluation		
Land Acquisition Activities	\$ 500.0K	\$ 11.0K
Levee Removal Construction	\$ 300.0K	
CDOT property		
Audubon property		
Other		
=====		
Total =	\$ 920.0K	\$ 11.0K

Annual Funds

-Larval Razorback Survival in Depressions	\$ 66.0K	
Total =	\$ 66.0K	

O&M Funds

-Larval Bonytail Survival in Depressions	\$ 66.5K	
-Easement and Weed Management	\$ 50.0K	
Total =	\$ 116.5K	

Grand Total =	\$1,102.5K	\$ 11.0K
---------------	------------	----------

*Assumes 10% BR-FWS overhead

XI. Budget Summary

FY 2002	\$ 1.288M in capital funds plus \$26.5K overhead
	\$ 73.0K annual funds
	<u>\$ 110.9K O&M funds</u>
	\$ 1.472M total
FY 2003	\$ 920.0K in capital funds plus \$11.0K overhead
	\$ 66.0K annual funds
	<u>\$ 116.5K O&M funds</u>
	\$ 1.103M total